

Appl. No. 08/879,827
Arndt dated July 28, 2004
Reply to Office Action of June 30, 2004

PATENT

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

1. (Previously presented) A method of modulating seed mass or oil content in a plant, the method comprising:

providing a first plant comprising a recombinant expression cassette containing an *ADC* nucleic acid linked to a plant promoter, which *ADC* nucleic acid comprises a nucleic acid sequence at least about 80% identical to a nucleic acid sequence selected from a group consisting of SEQ ID NO:100, SEQ ID NO:101, SEQ ID NO:102, SEQ ID NO:103, SEQ ID NO:104, SEQ ID NO:105, SEQ ID NO:106, SEQ ID NO:107, SEQ ID NO:108, SEQ ID NO:109, SEQ ID NO 110, and SEQ ID NO:111, and which *ADC* nucleic acid encodes a polypeptide that modulates seed mass or oil content;

selfing the first plant or crossing the first plant with a second plant, thereby producing a plurality of seeds; and

selecting seed with altered mass or oil content.

2. (Original) The method of claim 1, wherein expression of the *ADC* nucleic acid inhibits expression of an endogenous *ADC* gene and the step of selecting includes the step of selecting seed with increased mass.

3. (Original) The method of claim 2, wherein the seed have increased protein content, carbohydrate content, or oil content.

4. (Original) The method of claim 2, wherein the *ADC* nucleic acid is linked to the plant promoter in the antisense orientation.

5. (Cancelled)

6. (Original) The method of claim 2, wherein the first and second plants are the same species.

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7. (Original) The method of claim 2, wherein the first and second plants are members of the family Brassicaceae.
8. (Original) The method of claim 2, wherein the first and second plants are members of the family Solanaceae.
9. (Original) The method of claim 2, wherein the plant promoter is a constitutive promoter.
10. (Original) The method of claim 9, wherein the promoter is a CaMV 35S promoter.
11. (Original) The method of claim 2, wherein the promoter is a tissue-specific promoter.
12. (Original) The method of claim 11, wherein the promoter is ovule-specific.
13. (Original) A seed produced by the method of claim 2.
14. (Original) The method of claim 1, wherein expression of the ADC nucleic acid enhances expression of an endogenous ADC gene and the step of selecting includes the step of selecting seed with decreased mass.
15. (Cancelled)
16. (Original) The method of claim 14, wherein the first and second plants are the same species.
17. (Original) The method of claim 14, wherein the first and second plants are members of the family Brassicaceae.
18. (Original) The method of claim 14, wherein the first and second plants are members of the family Solanaceae.
19. (Original) The method of claim 14, wherein the plant promoter is a constitutive promoter.
20. (Original) The method of claim 19, wherein the promoter is a CaMV 35S promoter.
21. (Original) The method of claim 14, wherein the promoter is a tissue-specific promoter.
22. (Original) The method of claim 21, wherein the promoter is ovule-specific.

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23. (Original) A seed produced by the method of claim 14.

24. (Previously presented) A seed comprising a recombinant expression cassette containing an ADC nucleic acid, which ADC nucleic acid comprises a nucleic acid sequence at least about 80% identical to a nucleic acid sequence selected from a group consisting of SEQ ID NO:100, SEQ ID NO:101, SEQ ID NO:102, SEQ ID NO:103, SEQ ID NO:104, SEQ ID NO:105, SEQ ID NO:106, SEQ ID NO:107, SEQ ID NO:108, SEQ ID NO:109, SEQ ID NO:110, and SEQ ID NO:111, and which ADC nucleic acid encodes a polypeptide that modulates seed mass or oil content, with the proviso that the seed is not from *Arabidopsis*.

25. (Original) The seed of claim 24, which is derived from a plant that is a member of the family *Brassicaceae*.

26. (Cancelled)

27. (Original) The seed of claim 24, wherein the ADC nucleic acid is linked to a plant promoter in an antisense orientation and the seed mass is at least about 10% greater than the average mass of seeds from the same plant variety which lack the recombinant expression cassette.

28. (Original) The seed of claim 27, wherein the mass is at least about 20% greater than the average mass of seeds from the same plant variety which lack the recombinant expression cassette.

29. (Original) The seed of claim 27, wherein the mass is at least about 50% greater than the average mass of seeds from the same plant variety which lack the recombinant expression cassette.

30. (Original) The seed of claim 27, wherein the oil content is proportionally increased.

31. (Original) The seed of claim 27, wherein the protein content is proportionally increased.

32. (Original) The seed of claim 24, wherein the ADC nucleic acid is linked to a plant promoter in the sense orientation and the seed mass is at least about 10% less than the average mass of seeds of the same plant variety which lack the recombinant expression cassette.

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33. (Original) The seed of claim 32, which has a mass at least about 20% less than the average mass of seeds of the same plant variety which lack the recombinant expression cassette.

34. (Original) The seed of claim 32, which has a mass at least about 50% less than the average mass of seeds of the same plant variety which lack the recombinant expression cassette.

35. (Previously presented) A transgenic plant comprising an expression cassette containing a plant promoter operably linked to a heterologous ADC nucleic acid, wherein the ADC nucleic acid comprises a nucleic acid sequence at least about 80% identical to a nucleic acid sequence selected from a group consisting of SEQ ID NO:100, SEQ ID NO:101, SEQ ID NO:102, SEQ ID NO:103, SEQ ID NO:104, SEQ ID NO:105, SEQ ID NO:106, SEQ ID NO:107, SEQ ID NO:108, SEQ ID NO:109, SEQ ID NO:110, and SEQ ID NO:111, and which ADC nucleic acid encodes a polypeptide that modulates seed mass or oil content, with the proviso that the transgenic plant is not *Arabidopsis*.

36. (Cancelled)

37. (Original) The transgenic plant of claim 35, wherein the heterologous ADC polynucleotide encodes a ADC polypeptide.

38. (Cancelled)

39. (Cancelled)

40. (Previously presented) An isolated nucleic acid molecule comprising an expression cassette containing a plant promoter operably linked to a heterologous ADC nucleic acid comprises a nucleic acid sequence at least about 80% identical to a nucleic acid sequence selected from a group consisting of SEQ ID NO:100, SEQ ID NO:101, SEQ ID NO:102, SEQ ID NO:103, SEQ ID NO:104, SEQ ID NO:105, SEQ ID NO:106, SEQ ID NO:107, SEQ ID NO:108, SEQ ID NO:109, SEQ ID NO:110, and SEQ ID NO:111, and which ADC nucleic acid encodes a polypeptide that modulates seed mass or oil content.

41-44. (Cancelled)

45. (Previously presented) A method of modulating seed oil content in a plant, the method comprising:

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providing a first plant comprising a recombinant expression cassette containing an ADC nucleic acid linked to a plant promoter, which ADC nucleic acid comprises a nucleic acid sequence at least about 80% identical to a nucleic acid sequence selected from a group consisting of SEQ ID NO:100, SEQ ID NO:101, SEQ ID NO:102, SEQ ID NO:103, SEQ ID NO:104, SEQ ID NO:105, SEQ ID NO:106, SEQ ID NO:107, SEQ ID NO:108, SEQ ID NO:109, SEQ ID NO:110, and SEQ ID NO:111, and which ADC nucleic acid encodes a polypeptide that modulates seed mass or oil content;

selfing the first plant or crossing the first plant with a second plant, thereby producing a plurality of seeds; and

selecting seed with altered oil content.

46. (Canceled)

47. (Previously presented) The method of claim 1, wherein the ADC nucleic acid is SEQ ID NO:100.

48. (Previously presented) The method of claim 1, wherein the ADC nucleic acid is SEQ ID NO:101.

49. (Previously presented) The method of claim 1, wherein the ADC nucleic acid is SEQ ID NO:102.

50. (Previously presented) The method of claim 1, wherein the ADC nucleic acid is SEQ ID NO:103.

51. (Previously presented) The method of claim 1, wherein the ADC nucleic acid is SEQ ID NO:104.

52. (Previously presented) The method of claim 1, wherein the ADC nucleic acid is SEQ ID NO:105.

53. (Previously presented) The method of claim 1, wherein the ADC nucleic acid is SEQ ID NO:106.

54. (Previously presented) The method of claim 1, wherein the ADC nucleic acid is SEQ ID NO:107.

55. (Previously presented) The method of claim 1, wherein the ADC nucleic acid is SEQ ID NO:108.

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56. (Previously presented) The method of claim 1, wherein the ADC nucleic acid is SEQ ID NO:109.

57. (Previously presented) The method of claim 1, wherein the ADC nucleic acid is SEQ ID NO:110.

58. (Previously presented) The method of claim 1, wherein the ADC nucleic acid is SEQ ID NO:111.

59. (Canceled)

60. (Previously presented) The method of claim 14, wherein the ADC nucleic acid is SEQ ID NO:100.

61. (Previously presented) The method of claim 14, wherein the ADC nucleic acid is SEQ ID NO:101.

62. (Previously presented) The method of claim 14, wherein the ADC nucleic acid is SEQ ID NO:102.

63. (Previously presented) The method of claim 14, wherein the ADC nucleic acid is SEQ ID NO:103.

64. (Previously presented) The method of claim 14, wherein the ADC nucleic acid is SEQ ID NO:104.

65. (Previously presented) The method of claim 14, wherein the ADC nucleic acid is SEQ ID NO:105.

66. (Previously presented) The method of claim 14, wherein the ADC nucleic acid is SEQ ID NO:106.

67. (Previously presented) The method of claim 14, wherein the ADC nucleic acid is SEQ ID NO:107.

68. (Previously presented) The method of claim 14, wherein the ADC nucleic acid is SEQ ID NO:108.

69. (Previously presented) The method of claim 14, wherein the ADC nucleic acid is SEQ ID NO:109.

70. (Previously presented) The method of claim 14, wherein the ADC nucleic acid is SEQ ID NO:110.

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71. (Previously presented) The method of claim 14, wherein the ADC nucleic acid is SEQ ID NO:111.

72. (Canceled)

73. (Previously presented) The seed of claim 24, wherein the ADC nucleic acid is SEQ ID NO:100.

74. (Previously presented) The seed of claim 24, wherein the ADC nucleic acid is SEQ ID NO:101.

75. (Previously presented) The seed of claim 24, wherein the ADC nucleic acid is SEQ ID NO:102.

76. (Previously presented) The seed of claim 24, wherein the ADC nucleic acid is SEQ ID NO:103.

77. (Previously presented) The seed of claim 24, wherein the ADC nucleic acid is SEQ ID NO:104.

78. (Previously presented) The seed of claim 24, wherein the ADC nucleic acid is SEQ ID NO:105.

79. (Previously presented) The seed of claim 24, wherein the ADC nucleic acid is SEQ ID NO:106.

80. (Previously presented) The seed of claim 24, wherein the ADC nucleic acid is SEQ ID NO:107.

81. (Previously presented) The seed of claim 24, wherein the ADC nucleic acid is SEQ ID NO:108.

82. (Previously presented) The seed of claim 24, wherein the ADC nucleic acid is SEQ ID NO:109.

83. (Previously presented) The seed of claim 24, wherein the ADC nucleic acid is SEQ ID NO:110.

84. (Previously presented) The seed of claim 24, wherein the ADC nucleic acid is SEQ ID NO:111.

85. (Canceled)

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86. (Previously presented) The transgenic plant of claim 35, wherein the ADC nucleic acid is SEQ ID NO:100.

87. (Previously presented) The transgenic plant of claim 35, wherein the ADC nucleic acid is SEQ ID NO:101.

88. (Previously presented) The transgenic plant of claim 35, wherein the ADC nucleic acid is SEQ ID NO:102.

89. (Previously presented) The transgenic plant of claim 35, wherein the ADC nucleic acid is SEQ ID NO:103.

90. (Previously presented) The transgenic plant of claim 35, wherein the ADC nucleic acid is SEQ ID NO:104.

91. (Previously presented) The transgenic plant of claim 35, wherein the ADC nucleic acid is SEQ ID NO:105.

92. (Previously presented) The transgenic plant of claim 35, wherein the ADC nucleic acid is SEQ ID NO:106.

93. (Previously presented) The transgenic plant of claim 35, wherein the ADC nucleic acid is SEQ ID NO:107.

94. (Previously presented) The transgenic plant of claim 35, wherein the ADC nucleic acid is SEQ ID NO:108.

95. (Previously presented) The transgenic plant of claim 35, wherein the ADC nucleic acid is SEQ ID NO:109.

96. (Previously presented) The transgenic plant of claim 35, wherein the ADC nucleic acid is SEQ ID NO:110.

97. (Previously presented) The transgenic plant of claim 35, wherein the ADC nucleic acid is SEQ ID NO:111.

98. (Previously presented) The isolated nucleic acid of claim 40, wherein the ADC nucleic acid is SEQ ID NO:100.

99. (Previously presented) The isolated nucleic acid of claim 40, wherein the ADC nucleic acid is SEQ ID NO:101.

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100. (Previously presented) The isolated nucleic acid of claim 40, wherein the ADC nucleic acid is SEQ ID NO:102.

101. (Previously presented) The isolated nucleic acid of claim 40, wherein the ADC nucleic acid is SEQ ID NO:103.

102. (Previously presented) The isolated nucleic acid of claim 40, wherein the ADC nucleic acid is SEQ ID NO:104.

103. (Previously presented) The isolated nucleic acid of claim 40, wherein the ADC nucleic acid is SEQ ID NO:105.

104. (Previously presented) The isolated nucleic acid of claim 40, wherein the ADC nucleic acid is SEQ ID NO:106.

105. T(Previously presented) he isolated nucleic acid of claim 40, wherein the ADC nucleic acid is SEQ ID NO:107.

106. (Previously presented) The isolated nucleic acid of claim 40, wherein the ADC nucleic acid is SEQ ID NO:108.

107. (Previously presented) The isolated nucleic acid of claim 40, wherein the ADC nucleic acid is SEQ ID NO:109.

108. (Previously presented) The isolated nucleic acid of claim 40, wherein the ADC nucleic acid is SEQ ID NO:110.

109. (Previously presented) The isolated nucleic acid of claim 40, wherein the ADC nucleic acid is SEQ ID NO:111.